

TWO NEW SPECIES OF THE ORIENTAL PLANTHOPPER GENUS HEMISPHAERIUS SCHAUM (HEMIPTERA, ISSIDAE)

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Abstract In the present paper, two new species, *Hemisphaerius bimaculatus* sp. nov. and *Hemisphaerius trilobulus* sp. nov. are described and illustrated, *H. lysanias* Fennah from Vietnam is illustrated and found to be a senior synonym of *Gergithus esperauto* Chou et Lu. The type specimens are kept in Entomological Museum, Northwest A & F University (NWAUFU).

Key words Hemiptera, Issidae, *Hemisphaerius*, new species, new synonym, China.

The planthopper genus *Hemisphaerius* was erected by Schaum in 1850. The main difference from the similar genus *Gergithus* Stål is the wings being shorter than half of the tegmina. Based on the male genitalia, Chan & Yang (1993) split two genera: *Euhemisphaerius* and *Epyhemisphaerius* from *Hemisphaerius*. Up to now, 81 species have been reported in the world. After examining the specimens deposited in Entomological Museum, Northwest A & F University, two species new to science are described, and one new synonym is proposed as below.

Hemisphaerius Schaum, 1850

Hemisphaerius Schaum, 1850. Allgemeine Encyklopädie Ersch und Grub. 51: 71. Type species: *Issus coccinelloides* Burmeister.

Diagnosis. Body hemispherical, head including eyes narrower than pronotum. Vertex nearly rectangle, about 3 times wider than long, lateral margins elevated. Frons plain, distinctly wider at widest part than long in middle line, lateral margins strongly angulate below level of antennae, then incurving to suture. Clypeus on same plane as frons. Ocelli absent or present. Pronotum with 2 small pits near middle. Mesonotum with 1 small pit each near the middle of lateral margin. Tegmina with humeral angle strongly produced, reticulate, veins indistinct. Wings rudimentary, shorter than half length of tegmina, veins indistinct. Hind tibia with 2 lateral teeth. Spinal formula of hind leg (6-8) - (8-10) -2.

Male genitalia. Anal segment cup-like or mushroom-like in dorsal view, longer than the widest part. Suspensorium present. Phallobase shallowly U-shaped, asymmetrical at apex, without process. Genital styles subtriangular, process short and stout, hooked laterad. Pygofer with hind margin evenly

sinuate in lateral view, not angulate.

Distribution. China, Japan, Thailand, Vietnam, Burma, Philippines, Indonesia.

1 *Hemisphaerius lysanias* Fennah, 1978 (Figs. 1-9)

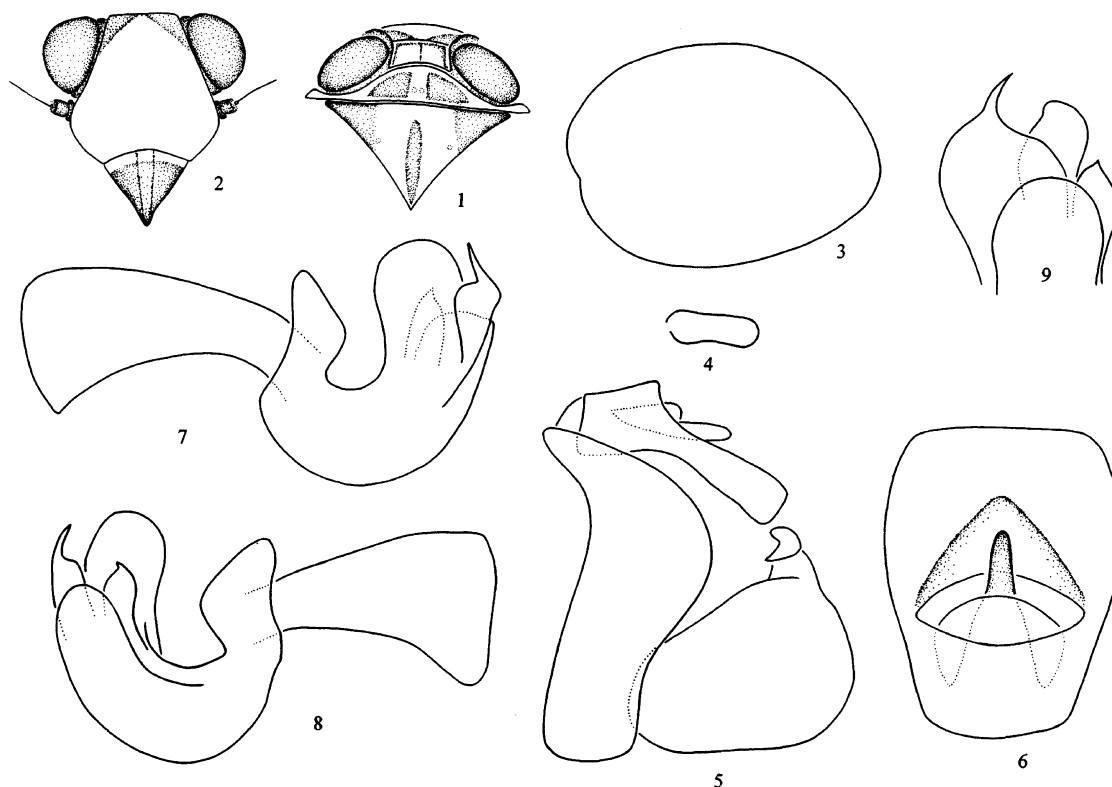
Hemisphaerius lysanias Fennah, 1978: 264.

Gergithus esperauto Chou et Lu, 1985. 122, syn. nov.

Materials examined: 1 (holotype of *Gergithus esperauto* Chou et Lu. The male holotype was recorded as female in Chou et Lu, 1985), Haikou, Hainan Province, 29 May 1964, coll. LIU Si-Kong; 1, Baoting County, Hainan Province, 12 Apr. 1964, coll. LIU Si-Kong; 1, Maling, Hainan Province, 18 Dec. 1974, coll. YANG Chi-Kun; 2, Mt. Jianfeng, Hainan Province, 6/8 January 1981, coll. CHEN Zhen-Yao; 1, 1, Mt. Diaoluo, Hainan Province, 23 May 1983, coll. ZHANG Ya-Lin; 1, Mt. Jianfeng, Hainan Province, 26 May 1983, coll. ZHANG Ya-Lin; 3, 2, Yachuling, Qiongzong County, 2 Aug. 2002, coll. WANG Pei-Ming; 21, 7, Hanlin, Ding'an County, Hainan Province, 26 July 2002, coll. WANG Zong-Qing and CHE Yan-Li; 1, 3, Mt. Diaoluo, Hainan Province, 16 Aug. 2002, coll. WANG Pei-Ming; 1, Lingkou, Ding'an County, Hainan Province, 25 July 2002, coll. WANG Zong-Qing and CHE Yan-Li.

Remarks. After examining the type specimen of *Gergithus esperauto* Chou et Lu, 1985, it is evident that male genitalia of *Gergithus esperauto* Chou et Lu is same as *Hemisphaerius lysanias* Fennah.

Distribution. China (Hainan), Vietnam.



Figs. 1-9. *Hemisphaerius lysanias* Fennah, male. 1. Vertex and thorax, dorsal view. 2. Frons and clypeus. 3. Tegmen. 4. Wing. 5. Male genitalia segment, left side. 6. Anal segment, dorsal view. 7. Aedeagus, left side. 8. Aedeagus, right side. 9. Apex of aedeagus, ventral view.

2 *Hemisphaerius trilobulus* sp. nov. (Figs. 10-19)

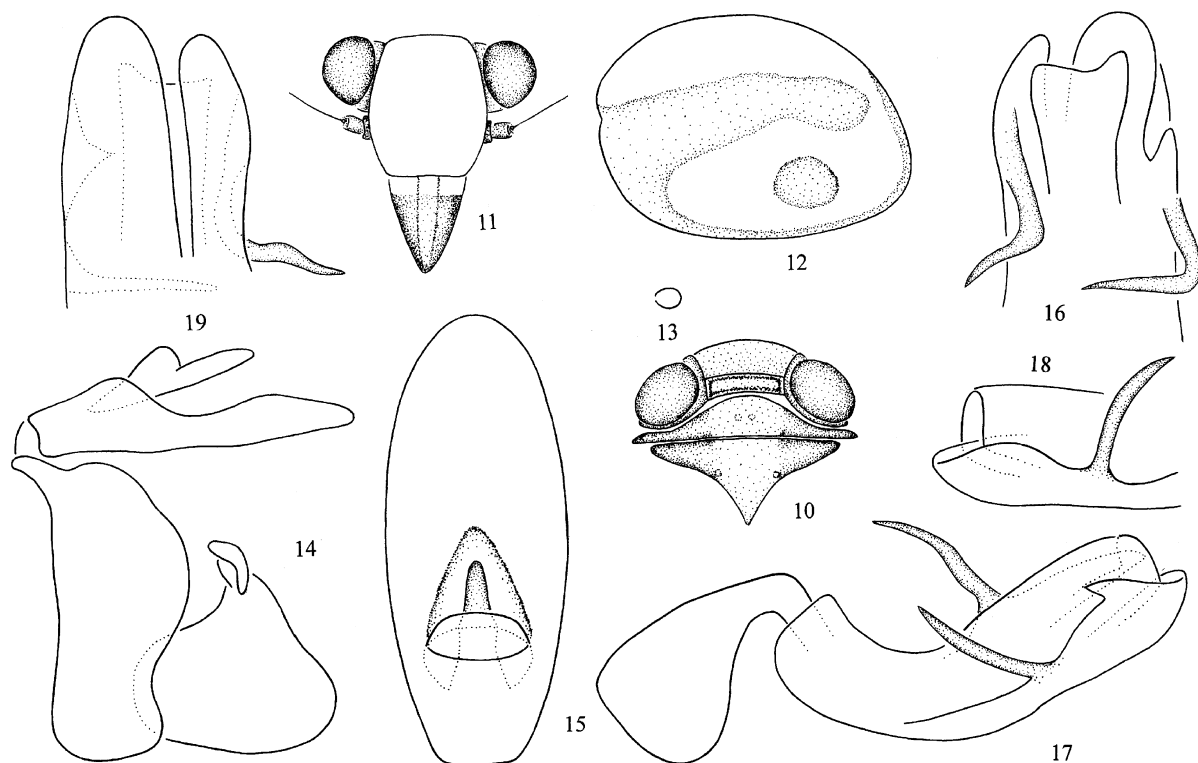
Length (including tegmen): 3.4-3.6 mm, 3.5-3.7 mm. Tegmen: 3.0-3.1 mm; 3.1-3.2 mm.

Uniformly brown to dark brown or pale brown with the following exceptions: body with dark brown maculation, lateral margin of vertex more or less dark brown, eyes dark brown, clypeus dark brown with pale brown band, pronotum and mesonotum with dark brown markings. Tegmina, fore coxae and femora, fore tibiae, meso- femora and tibiae, and hind tibiae with black-brown stripes.

Vertex with disc depressed, 3.3 times wider at apex than long in middle line, lateral margins slightly incurved. Frons glossy, with disc elevated, 1.4 times wider at widest part than at base, 1.25 times longer in middle line than wide at widest part. Pronotum and mesonotum with a nearly triangular mark at each lateral angle. Mesonotum 2.1 times wider than long. Tegmina smooth and semitransparent, length about 1.8 times wider than widest part, veins indistinct, a wide stripe from base to middle and the other along the posterior margin, between which there is a spot.

Wings rudimentary, 0.06 times length of tegmina, semitransparent, veins indistinct. Spinal formula of hind leg 6-9-2.

Male genitalia. Anal segment in dorsal view long and elliptical, about 2.4 times longer at middle than at widest part; apical margin smoothly rounded; basal margin almost straight; ventral margin in profile nearly straight; anal tube arising before midlength. Connective fused with aedeagus. Aedeagus asymmetrical, stout, slightly curved downward medially, with lateral, ventral and dorsal lobes; dorsal lobe in dorsal view not bifurcate, apex concave; in ventral view, lateral and ventral lobe nearly parallel, bigger than ventral lobe; in lateral view the margin of lateral lobe extending into 2 spines, one short and stout, the other long and slender; ventral lobe in lateral view with one long and slender spine. Genital style with apical margin wider than median, subtriangular and rounded at ventrocaudal margin, process short and stout, hooked near base, in caudal view inner apical angle incised, dorsal and ventral margins not parallel. Pygofer in profile distinctly longer ventrally than dorsally, dorsocaudal angle slightly produced.



Figs. 10-19. *Hemisphaerius trilobulus* sp. nov., male. 10. Vertex and thorax, dorsal view. 11. Frons and clypeus. 12. Tegmen. 13. Wing. 14. Male genitalia segment, left side. 15. Anal segment, dorsal view. 16. Apex of aedeagus, dorsal view. 17. Aedeagus, left side. 18. Apex of aedeagus, right side. 19. Apex of aedeagus, ventral view.

Remarks. This species is highly variable in coloration. Some specimens are uniformly dark brown or brown, without markings while others have dark markings (see description), all have the same male genitalia.

Holotype , Mengla, Yunnan Province, 15 May 1991, coll. WANG Ying-Lun and CAI Wan-Zhi. **Paratypes** 2 , Menglun, Xishuangbanna, Yunnan Province, 21/30 Apr. 1974, coll. CHOU Io, YUAN Feng and HU Yin-Yue; 2 , 3 , Menglun, Xishuangbanna, Yunnan Province, 17/24 Apr. 1982, coll. ZHOU Jing-Ruo and WANG Su-Mei; 20 , Yaoqu, Mengla, Yunnan Province, 8/22 May 1991, coll. WANG Ying-Lun and CAI Wan-Zhi; 10 , Yaoqu, Mengla, Yunnan Province, 7/11 May 1991, coll. WANG Ying-Lun and CAI Wan-Zhi.

Etymology. The specific name is derived from the English words "trilobe", which means the dorsal, lateral and ventral lobe not bifurcate.

This species is similar to *H. tappanus* Matsumura, but differs from the latter by: 1) tegmen with a band at middle and along posterior margin, surrounding a subapical spot, whereas the latter species has 2 oblique stripes near the apex of the tegmen; 2) clypeus with a band near frons, whereas the latter

species has the clypeus with 2 stripes in the middle.

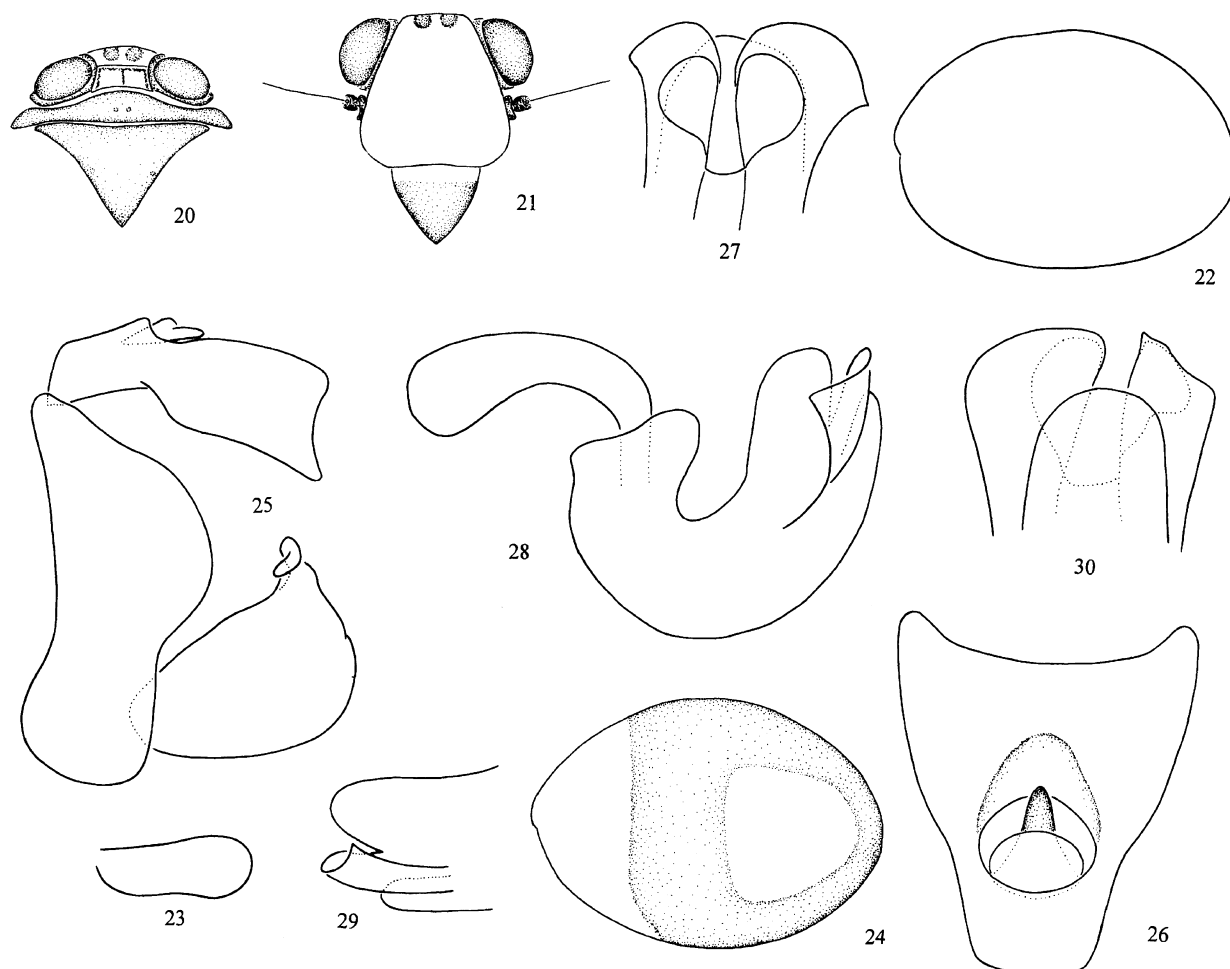
3 *Hemisphaerius bimaculatus* sp. nov. (Figs. 20-30)

Length (including tegmen): 5.1 mm, 5.3 mm. Tegmen: 4.6 mm; 4.7 mm.

Body (male) testaceous except disc of vertex pale brown. Eyes brown. Frons with paler spots. Clypeus black, with pale yellow band. Rostrum, wings and abdomen, pale brown. Legs pale brown with apex of pror and mesor tibiae black and hind femora dark brown.

Body (female) generally testaceous with black markings. Tegmina pale brown with black annular marking sub-basally to apex, along anterior and posterior margin.

Vertex with disc depressed, 3.7 times wider at apex than long in middle line, lateral margins slightly convergent. Frons glossy, with disc risen, apex with 2 spots, 1.5 times wider at widest part than at base, 1.1 times longer in middle line than wide at widest part. Mesonotum 2.0 times wider than long. Tegmina finely rugulose-punctate, veins indistinct, about 1.3 times wider than widest part. Wings rudimentary, semitransparent, veins indistinct, 0.4 times length of tegmina. Spinal formula of hind leg 6-10-2.



Figs. 20-30. *Hemisphaerius bimaculatus* sp. nov. 20. Vertex and thorax, dorsal view. 21. Frons and clypeus. 22. Tegmen, male. 23. Wing, male. 24. Tegmen, female. 25. Male genitalia segment, left side. 26. Anal segment, dorsal view. 27. Apex of aedeagus, dorsal view. 28. Aedeagus, left side. 29. Apex of aedeagus, right side. 30. Apex of aedeagus, ventral view.

Male genitalia. Anal segment in dorsal view cup-like, about 1.1 times longer at middle than at widest part, apical margin strongly concave, apical angles produced, basal margin almost straight, ventral margin in profile downcurved, anal tube situated beyond the middle. Connective fused with aedeagus. Aedeagus asymmetrical, stout, slightly curved downward medially, with lateral, ventral and dorsal lobes. Dorsal lobe in dorsal view bifurcate, the left dorsal and lateral lobes bigger than the right respectively; in ventral view ventral lobe not bifurcate, apical margin convex and smooth. Lateral, ventral and dorsal lobes combine near the apex, in lateral view the margin of lateral lobe upcurved. Genital style with apical margin wider than median, subtriangular and rounded at ventrocaudal margin, process short and stout, hooked near base, in caudal view inner apical angle incised, dorsal and ventral margins not parallel. Pygofer in profile distinctly longer ventrally than dorsally, dorsocaudal angle

slightly produced.

Holotype, Tianyou, Fujian Province, 27 June 1982, coll. ZHANG Wan-Chi. Paratypes 1, Wuyigong, Fujian Province, 26 June 1982, coll. QI Shi-Cheng; 1, Mt. Daiyun, Fujian Province, 30 July 1984, CUI Zhi-Xin.

Etymology. The name “*bimaculatus*” is derived from the Latin, referring to the apical part of frons with 2 paler spots.

This species is allied to *Hemisphaerius palaemon* Fennah, but can be distinguished from the latter by: 1) wings 0.4 times length of tegmina, but the latter, about half; 2) spinal formula of hind leg 6-10-2, but the latter, 6-9-2; 3) the apex of frons with 2 paler spots, the latter without.

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中国球瓢蜡蝉属二新种记述 (半翅目, 瓢蜡蝉科)

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摘 要

1 丽球瓢蜡蝉 *Hemisphaerius lysanias* Fennah
Gergithus esperauto Chou et Lu, 1985: 122, 新异名。

观察标本: 1 (*Gergithus esperauto* Chou et Lu 的正模, 原文记述为 1, 实际标本为雄虫), 海南海口, 1964-05-29, 刘思孔采; 1, 海南岛保亭, 1964-04-12, 刘思孔采; 1, 海南马岭, 1974-12-18, 杨集昆采; 2, 海南尖峰岭, 1981-01-6/8, 陈振耀采; 1, 1, 海南吊罗山, 1983-05-23, 张雅林采; 1, 海南岛尖峰岭, 1983-05-26, 张雅林采; 3, 2, 海南琼中牙查岭, 2002-07-02, 王培明采; 21, 7, 海南定安县翰林, 2002-07-26, 王宗庆、车艳丽采; 1, 3, 海南吊罗山, 2002-08-16, 王培明采; 1, 海南定安县岭口, 2002-08-25, 王宗庆、车艳丽采。

2 三瓣球瓢蜡蝉, 新种 *Hemisphaerius trilobulus* sp. nov.

本种与 *H. tapanus* Matsumura 相似, 但可从以下特征区分: 1) 前者前翅中域及边缘分别具有 1 斜条纹, 条纹之

间具有 1 个圆斑, 后者翅近端部具 2 斜条纹; 2) 前者唇基端部具横带, 后者唇基中央具 2 条纵带。

正模, 云南勐腊, 1991-05-15, 王应伦、彩万志采。副模: 2, 云南西双版纳勐仑, 1974-04-21/30, 周尧、袁锋、胡隐月采; 2, 3, 云南西双版纳勐仑, 1982-04-17/24, 周静若、王素梅采; 20, 云南勐腊瑶区, 1991-04-08/22, 王应伦、彩万志采; 10, 云南勐腊瑶区, 1991-05-07/11, 王应伦、彩万志采。

3 双斑球瓢蜡蝉, 新种 *Hemisphaerius bimaculatus* sp. nov.

本种与 *H. palaemon* Fennah 相近似, 但可从以下特征区分: 1) 后翅仅为前翅的 0.4 倍, 后者后翅为前翅的 0.5; 2) 后足刺式 6-10-2, 后者 6-9-2; 3) 额的端部具有 2 个浅色的斑, 后者无。

正模, 福建天游, 1982-06-27, 张万池采。副模 2, 福建武夷宫, 1982-06-26, 齐石成采; 1, 福建戴云山, 1984-07-30, 崔志新采。

关键词 半翅目, 瓢蜡蝉科, 球瓢蜡蝉属, 新种, 新异名, 中国.
中图分类号 Q969.365.8